allowable form and that the objection to the abstract of the disclosure has been obviated.

Responsive to the rejection of claims 1, 2, and 10-13 under 35 U.S.C. § 102(a) as being anticipated by "Synthesis of $Fe_{16}N_2$ films by using reactive plasma" (Takahashi et al.), Applicant has amended claims 1 and 2 and submits that claims 1, 2, and 10-13 are now in condition for allowance.

Claim 1, as amended, recites in part:

> an iron nitride thin film having a nitrogen martensite α′ phase with α (002) surface formed on a substrate...

Applicant submits that such an invention is neither taught, disclosed, nor suggested by Takahashi et al or any of the other cited references, alone or in combination.

Takahashi et al., at page 3041, disclose that, as a first step, it is considered to be important to form an α′ face by introducing the selective site occupation of N atoms only along <001> axis of α-Fe. Takahashi et al further disclose the presence of a diffracted line of (002) from α′. Takahashi et al, however, does not specifically disclose or suggest an α′ phase with an α (002) surface formed on a substrate. Therefore, Takahashi et al fail to teach or suggest the present invention set forth in claim 1, as amended.

Claim 1, as amended, further recites in part:

> said iron nitride thin film being produced on the substrate in a manner to as to permit diffraction rate from a γ to be observed, said α′ phase having diffraction rays observed only said α (002) surface.

Applicant submits that such an invention is neither taught, disclosed nor suggested by Takahashi et al or any of the other cited references, alone or in combination.

Takahashi et al, at page 3043, disclose the appearance of γ′ phase. Takahashi et al disclose a phase change of $Fe_{16}N_2$ films occurs around 250°C which cause α″ + α′ to α + γ′ (as further illustrated in Fig. 3(b)). As such, Takahashi et al did not disclose or suggest the co-existence of the α′ and γ′ phases. Additionally, Takahashi et al do not disclose or suggest that the α′ phase has diffraction ways that are observed from only the α (002) surface. As such, Takahashi et al fail to teach or suggest the present invention, as set forth by claim 1, as amended.

For all the foregoing reasons, Applicants submit that claim 1, and claims 10 and 12 depending therefrom, are now in condition for allowance and hereby respectfully request that the rejection thereof based on Takahashi et al be withdrawn.

Claim 2, as amended, recites in part:

> iron (α - Fe) thin films and iron nitride thin films alternately deposited on the substrate...

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Applicant submits that such an invention is neither taught, disclosed, nor suggested by Takashi et al or any of the other cited references, alone or in combination.

Further, claim 2, as amended, recites in part:

> a coercive force of said iron nitride of said thin films being substantially 1.0 Gauss.

Applicant submits that such an invention is neither taught, disclosed, nor suggested by Takahashi et al or any of the other cited references, alone or in combination.

Takahashi et al do not disclose or suggest a measurement of a coercive force associated with the iron nitride thin films produced thereby. Further, Takahashi et al do not disclose such films to specifically have a coercive force of substantially 1.0 Gauss. Additionally, in the present invention, the coercive force of substantially 1.0 Gauss is achieved in the embodiment employing multiple alternating iron thin films and iron nitride thin films (page 11 of the present specification). As Takahashi et al do not disclose or suggest magnetic thin films comprising multiple iron thin films and multiple iron nitride thin films, a coercive force of about 1.0 Gauss can not be considered an inherit characteristic of a magnetic thin film employing a single iron nitride thin film on an iron thin film. Thus, Takahashi et al fail to teach or suggest the present invention, as set forth by claim 2, as amended.

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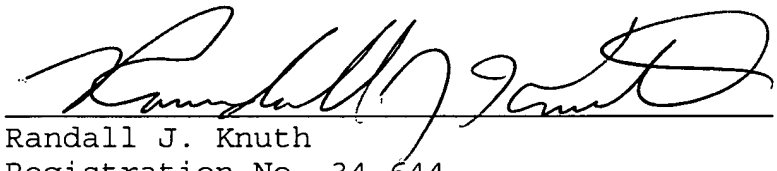
For all the foregoing reasons, Applicant submits that claim 2, and claims 11-13 depending therefrom, are now in condition for allowance. Therefore, Applicant respectfully requests that the rejection of claims 2, 11, and 13 based upon Takahashi et al be withdrawn.

If the Examiner has any questions or comments that would speed prosecution of this case, the Examiner is invited to call the undersigned at 260/485-6001.

Respectfully submitted,



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Encs: Replacement abstract
Replacement Claims
Marked-up Claims
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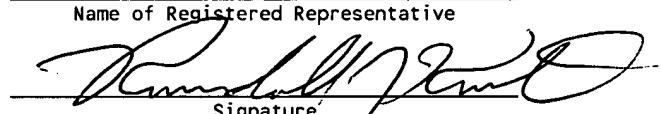
Name of Registered Representative



Signature
September 26, 2002
Date

MARKED-UP CLAIMS

Please amend claim 1 as follows:

1. A magnetic thin film comprising:

an iron nitride thin film having a nitrogen martensite α′ phase with α (002) surface formed on a substrate [using an opposed-target DC sputtering method by means of reactive sputtering with N_2 gas wherein] , said iron nitride thin film being produced [using an N_2 gas flow rate ratiom of 25% permitting] on the substrate in a manner so as to permit diffraction rays from a γ′ phase to be observed, said α′ phase having diffraction rays observed from only said α (002) surface.

2. A magnetic thin film comprising:

iron (α - Fe) thin films and iron nitride thin films alternately deposited on the substrate [by means of an opposed-target DC sputtering method], said iron nitride thin films having a nitrogen martensite α′ phase with α (002) surface, said α′ phase having diffraction rays observed only from said α (002) surface [wherein] , a coercive force of said iron nitride thin films [is] being substantially 1.0 Gauss.

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